

What Is Claimed Is:

1. A method comprising:

providing a watercraft, the watercraft comprising a hull, a fluid chamber, and at least one fluid port, the fluid  
5 port allowing fluid communication between the fluid chamber and a liquid environment external to the watercraft;

propelling the watercraft within the liquid environment in a manner such that a liquid stream boundary layer exist adjacent the hull of the watercraft; and

10 repetitively increasing and decreasing the internal volume of the fluid chamber in a manner such that fluid is expelled from the fluid port into the liquid stream boundary layer.

2. A method in accordance with claim 1 wherein the step of  
15 repetitively increasing and decreasing the internal volume of the fluid chamber occurs in a manner such that the fluid expelled from the fluid port into the liquid stream boundary layer is in a gaseous state as it is expelled.

3. A method in accordance with claim 2 wherein the step of  
20 repetitively increasing and decreasing the internal volume of the fluid chamber occurs in a manner such that the decreasing of the internal volume of the fluid chamber causes the expulsion of fluid from the fluid port into the liquid stream

boundary layer and such that the increasing of the internal volume of the fluid chamber causes fluid in a gaseous state to be drawn into the fluid chamber from a gaseous environment external to the watercraft.

5           4. A method in accordance with claim 3 wherein the fluid port constitutes a first fluid port and wherein the step of providing the watercraft occurs in a manner such that the watercraft comprises a second fluid port and first and second valves, the second fluid port allowing communication of fluid  
10 between the fluid chamber and the gaseous environment external to the watercraft, each of the first and second valves being movable between opened and closed positions, the first valve being configured and adapted to prevent fluid communication between the first fluid port and the fluid chamber when in its  
15 closed position and to allow such communication when in its opened position, the second valve being configured and adapted to prevent fluid communication between the second fluid port and the fluid chamber when in its closed position and to allow such communication when in its opened position, the step of  
20 repetitively increasing and decreasing the internal volume of the fluid chamber occurring in a manner such that the decreasing of the internal volume of the fluid chamber occurs with the first valve in its opened position and the second valve in its closed position and such that the increasing of

the internal volume of the fluid chamber occurs with the first valve in its closed position and the second valve in its opened position.

5 5. A method in accordance with claim 1 wherein the step of repetitively increasing and decreasing the internal volume of the fluid chamber occurs in a manner such that fluid expelled from the fluid port into the liquid stream boundary layer is in a liquid state as it is expelled.

10 6. A method in accordance with claim 5 wherein the step of repetitively increasing and decreasing the internal volume of the fluid chamber occurs in a manner such that fluid in a liquid state is drawn into the fluid port from the liquid stream boundary layer.

15 7. A method in accordance with claim 6 wherein the fluid port constitutes a first fluid port and wherein the step of providing the watercraft occurs in a manner such that the watercraft comprises a second fluid port, the second fluid port allowing fluid communication between the fluid chamber and the liquid environment, and wherein the step of  
20 repetitively increasing and decreasing the internal volume of the fluid chamber occurs in a manner such that fluid in a liquid state is intermittently expelled from the second fluid port into the liquid environment and such that fluid in a

liquid state is intermittently drawn into the second fluid port, the step of propelling the watercraft within the liquid environment occurring via the expulsion of liquid from the second liquid port.

5           8. A method in accordance with claim 5 wherein the step of repetitively increasing and decreasing the internal volume of the fluid chamber occurs in a manner such that the repetitiveness occurs with a frequency below one-hundred Hertz.

10           9. A method in accordance with claim 1 wherein the step of providing the watercraft further comprises providing the watercraft such that the watercraft has an electromagnetic actuator, the step of repetitively increasing and decreasing the internal volume of the fluid chamber further comprising  
15 using the electromagnetic actuator to repetitively increase and decrease the internal volume of the fluid chamber.

10. A method comprising:

providing a watercraft, the watercraft comprising a hull and a reciprocating member;

20           providing a liquid environment external to the watercraft, the liquid environment being in liquid communication with the reciprocating member of the watercraft;  
propelling the watercraft within the liquid environment

in a manner such that a liquid stream boundary layer exist adjacent the hull of the watercraft; and

increasing momentum within the liquid stream boundary layer by moving the reciprocating member in a linearly  
5 reciprocating manner relative to the hull of the watercraft.

11. A method in accordance with claim 10 wherein the step of providing the watercraft further comprises providing the watercraft such that the watercraft has an electromagnetic actuator, and wherein the step of increasing momentum within  
10 the liquid stream boundary layer comprises using the electromagnetic actuator to drive the movement of the reciprocating member.

12. A method in accordance with claim 10 wherein the step of increasing momentum within the liquid stream boundary  
15 layer occurs via alternating compression and expansion waves created by the moving of the reciprocating member in the linearly reciprocating manner relative to the hull of the watercraft.

13. A method in accordance with claim 12 wherein the  
20 step of increasing momentum within the liquid stream boundary layer via alternating compression and expansion waves occurs in a manner such that the alternating compression and expansion waves have a frequency below one-hundred hertz.

14. A method in accordance with claim 10 wherein the watercraft comprises a liquid port, the liquid environment being in liquid communication with the reciprocating member via the liquid port, and wherein the step increasing momentum  
5 within the liquid stream boundary layer occurs in a manner such that the moving of the reciprocating member in the linearly reciprocating manner relative to the hull of the watercraft causes liquid to be expelled from the liquid port into the liquid stream boundary layer and to be drawn into the  
10 liquid port from the liquid stream boundary layer.

15. A method in accordance with claim 10 wherein the liquid port constitutes a first liquid port and wherein the step of providing the watercraft occurs in a manner such that the watercraft comprises a second liquid port, the second  
15 liquid port allowing liquid communication between the reciprocating member of the watercraft and the liquid environment, the step of propelling the watercraft within the liquid environment occurring by liquid being intermittently expelled from the second fluid port into the liquid  
20 environment in response to the moving of the reciprocating member in the linearly reciprocating manner, the moving of the reciprocating member in the linearly reciprocating manner also causing liquid to be intermittently drawn into the second fluid port.

16. A watercraft comprising:

a hull, the hull having an exterior surface;

a reciprocating member, the reciprocating member being  
operatively connected to the hull in a manner such that the

5 reciprocating member is linearly movable between first and  
second positions in a reciprocating manner;

a fluid passageway that is partially bound by the  
reciprocating member; and

10 an opening through the exterior surface of the hull,  
the opening forming a portion of the fluid passageway.

17. A watercraft in accordance with claim 16 further  
comprising an electromagnetic actuator, the electromagnetic  
actuator being operatively connected to the reciprocating  
member such that electromagnetic actuator is adapted to drive  
15 the reciprocating member back and forth between the first and  
second positions.

18. A watercraft in accordance with claim 16 wherein the  
watercraft is surrounded by an external environment and  
wherein the opening provides the sole fluid connection between  
20 the fluid passageway and the external environment.

19. A watercraft in accordance with claim 16 wherein the  
watercraft is surrounded by an external environment and  
wherein the watercraft further comprises a valve, the valve

being moveable between opened and closed positions, the valve preventing communication between the reciprocating member and the external environment through the opening when the valve is in the closed position, the valve allowing communication  
5 between the reciprocating member and the external environment through the opening when the valve is in the opened position.

20. A watercraft in accordance with claim 19 further comprising an electromagnetic actuator, the electromagnetic actuator being operatively connected to the reciprocating  
10 member such that electromagnetic actuator is adapted to drive the reciprocating member back and forth between the first and second positions.